EXHIBIT A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	John B. Davis	
Control No.	:	90/009,469	Confirmation No.: 4753
Patent No.	:	5,636,719	Group Art Unit: 3992
Patent Issued	:	June 10, 1997	
Title	:	ROTATIONAL CONTROL APPARATUS	Examiner: William C. Doerrler
Docket No.	:	H550.18-0004	

AMENDMENT AFTER FINAL

Mail Stop *Ex Parte* Reexam
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FILED VIA EFS-WEB
February 4, 2010

INTRODUCTION

This is in response to the Office Action mailed on January 27, 2010. Please amend the above-identified patent as follows:

AMENDMENTS TO THE CLAIMS

With respect to U.S. Pat. No. 5,636,719, please amend claims 14, 15, 19, 22 and 23, such that the status of the claims is as follows:

1. (Original) Rotational control apparatus comprising, in combination: an input rotatable about an axis; an output, with the input rotatable about the axis relative to the output, with each of the input and the output including a friction engaging surface rotatably fixed thereto at a radial spacing from the axis; means for engaging the friction engaging surfaces of the input and output together to rotatably relate the input and output in an engaged condition and for disengaging the friction engaging surfaces of the input and output in a disengaged condition, with the output including a first, slideably mounted friction disc portion, with the first, friction disc portion being reciprocal between a first position to rotatably relate the first, friction disc portion to the input and a second position with the friction engaging surfaces in the disengaged condition; and an eddy current drive including permanent magnets and a ring of magnetic material, with one of the ring of magnetic material and the permanent magnets being carried by the input and the other of the ring of magnetic material and the permanent magnets being mounted on the first, friction disc portion.

2. (Original) The rotational control apparatus of claim 1 wherein the output is driven either with the input when the friction engaging surfaces are in the engaged condition or at a rotational speed less than the input when the friction engaging surfaces are in the disengaged condition by the eddy current drive and without separate controls for the eddy current drive whereby the output is driven with the rotational speed of the output being controlled by and dependent upon the condition of the friction engaging surfaces.

3. (Original) The rotational control apparatus of claim 1 wherein the first, friction disc portion is slideably mounted on and rotationally related to a hub rotatably mounted on a shaft, with the input being rotatable relative to the hub and to the shaft, with the first, friction disc portion being reciprocal on the hub and in the first position rotatably relates the first, friction disc portion to the input to drive the hub.

4. (Original) The rotational control apparatus of claim 3 further comprising, in combination: means for rotating the hub on the shaft at a speed different from the speeds when the first, friction disc portion is in the first and second positions.

5. (Original) The rotational control apparatus of claim 4 wherein the different speed rotating means comprises, in combination: a second, friction disc portion slideable and rotationally related to the shaft, with the second, friction disc portion being reciprocal between a first position to rotatably relate the second, friction disc portion and the hub and a second position with the hub not being rotatably related to the second, friction disc portion and the shaft.

6. (Original) The rotational control apparatus of claim 1 wherein one of the ring of magnetic material and the permanent magnets is mounted on the first, friction disc portion opposite to the friction engaging surface.

7. (Original) The rotational control apparatus of claim 6 wherein the ring of material and permanent magnets have an increased spacing as the first, friction disc portion is reciprocated from its second position to its first position.

8. (Original) The rotational control apparatus of claim 6 wherein the one of the ring of magnetic material and the permanent magnets carried by the input is mounted to an annular body portion; and wherein the rotational control apparatus further comprises, in combination: means on the annular body portion for providing angular and perpendicular air flow during rotation of the input for cooling the annular body portion.

9. (Original) The rotational control apparatus of claim 8 wherein the air flow providing means comprises circumferentially spaced cooling fins formed on the annular body portion opposite to the other of the ring of magnetic material and the permanent magnets.

10. (Original) The rotational control apparatus of claim 9 wherein the annular body portion includes first, second, third, and fourth quadratures, with the cooling fins in the first and third quadratures arranged solely at an acute angle from radial lines from the axis in the direction of rotation and the cooling fins in the second and fourth quadratures arranged along radial lines from the axis.

11. (Original) The rotational control apparatus of claim 6 wherein the one of the ring of magnetic material and the permanent magnets carried by the input is mounted to an annular body portion, with the annular body portion being mounted to the input by an annular support, with the annular support including vanes located radially outward of the ring of magnetic material and the permanent magnets for drawing air radially outwardly intermediate the ring of magnetic material and the permanent magnets.

12. (Original) The rotational control apparatus of claim 1 wherein the ring of magnetic material and the permanent magnets are at the radial spacing from the axis of the friction engaging surfaces of the input and output.

13. (Original) The rotational control apparatus of claim 1 wherein the output is driven at all times.

14. (Currently Amended) In a rotational control apparatus including a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted about an axis on a shaft and including an input rotatable about the axis and relative to the hub and to the shaft at a first rotational speed, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the input to drive the hub at the first rotational speed and a second position, the improvement comprising means for rotating the hub [on] relative to the shaft at a second speed different from the first rotational speed when the first, friction disc portion is in the second position with the rotating means including a first drive component carried by the input and a second drive component mounted to the first, friction disc portion, with the spacing between

the first and second drive components changing as the first friction disc portion moves from the second position to the first position.

15. (Currently Amended) [The] In a rotational control apparatus [of claim 14] including a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted about an axis on a shaft and including an input rotatable about the axis and relative to the hub and to the shaft at a first rotational speed, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the input to drive the hub at the first rotational speed and a second position, the improvement comprising

means for rotating the hub on the shaft at a second speed different from the first rotational speed when the first, friction disc portion is in the second position with the rotating means including a first drive component carried by the input and a second drive component mounted to the first, friction disc portion, with the spacing between the first and second drive components changing as the first friction disc portion moves from the second position to the first position,

wherein the first, friction disc portion is rotatably related to the input by a friction ring engaging an annular friction engageable portion, with the friction ring and the engageable portion being at a radial spacing from the axis, with the first and second drive components being at the radial spacing from the axis.

16. (Original) The rotational control apparatus of claim 15 wherein the second speed is slower than the first speed.

17. (Original) The rotational control apparatus of claim 16 wherein the rotating means comprises an eddy current drive.

18. (Previously Amended) The rotational control apparatus of claim 17 wherein the second drive component is one of permanent magnets and a ring of magnetic material and the first drive component is the other of the permanent [magents] magnets and the ring of magnetic material.

19. (Currently Amended) [The] In a rotational control apparatus [of claim 14] including a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted about an axis on a shaft and including an input rotatable about the axis and relative to the hub and to the shaft at a first rotational speed, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the input to drive the hub at the first rotational speed and a second position, the improvement comprising

means for rotating the hub on the shaft at a second speed different from the first rotational speed when the first, friction disc portion is in the second position with the rotating means including a first drive component carried by the input and a second drive component mounted to the first, friction disc portion, with the spacing between the first and second drive components changing as the first friction disc portion moves from the second position to the first position; and further comprising, in combination: means for rotating the hub on the shaft at a third speed different from the first and second speeds when the first, friction disc portion is in the second position.

20. (Original) The rotational control apparatus of claim 19 wherein the third speed is zero such that relative rotation does not occur between the hub and the shaft.

21. (Original) The rotational control apparatus of claim 20 wherein the third speed rotating means comprises, in combination: a second, friction disc portion slideable and rotationally related to the shaft, with the second, friction disc portion being reciprocal between a first position to rotatably relate the second, friction disc portion and the hub to brake the hub and a second position with the hub being rotatably independent from the second, friction disc portion and the shaft.

22. (Currently Amended) [The] In a rotational control apparatus [of claim 14] including a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted about an axis on a shaft and including an input rotatable about the axis and relative to the hub and to the shaft at a first rotational speed, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the input to drive the hub at the first rotational speed and a second position, the improvement comprising

means for rotating the hub on the shaft at a second speed different from the first rotational speed when the first, friction disc portion is in the second position with the rotating means including a first drive component carried by the input and a second drive component mounted to the first, friction disc portion, with the spacing between the first and second drive components changing as the first friction disc portion moves from the second position to the first position,

wherein the input is rotatably mounted on the hub.

23. (Currently Amended) [The] In a rotational control apparatus [of claim 14] including a first, friction disc portion slideably mounted on and rotationally related to a hub rotatably mounted about an axis on a shaft and including an input rotatable about the axis and relative to the hub and to the shaft at a first rotational speed, with the first, friction disc portion being reciprocal on the hub between a first position to rotatably relate the first, friction disc portion to the input to drive the hub at the first rotational speed and a second position, the improvement comprising

means for rotating the hub on the shaft at a second speed different from the first rotational speed when the first, friction disc portion is in the second position with the rotating means including a first drive component carried by the input and a second drive component mounted to the first, friction disc portion, with the spacing between the first and second drive components changing as the first friction disc portion moves from the second position to the first position,

wherein the first drive component is mounted to an annular body portion, with the annular body portion being mounted to the input by an annular support, with

the annular support including vanes located radially outward of the first and second drive components for drawing air radially outwardly intermediate the first and second drive components.

24. (Original) The rotational control apparatus of claim 14 wherein the output is driven at all times.

25. (Original) In a rotational control apparatus including an input rotatable about an axis, an output, with the input rotatable about the axis relative to the output, and first and second drive components carried by the input and output, respectively, for rotatably relating the input and the output, the improvement comprising, in combination: an annular body portion including first, second, third, and fourth quadratures, with one of the first and second drive components mounted to the annular body portion; and circumferentially spaced cooling fins formed on the annular body portion opposite to the one of the first and second drive components, with each of the cooling fins having first radial ends located generally the same radial distance from the axis and having second radial ends located generally the same radial distance from the axis and which is greater than the radial distance of the first radial ends, with the cooling fins in the first and third quadratures arranged at an acute angle from radial lines from the axis in the direction of rotation and the cooling fins in the second and fourth quadratures arranged along radial lines from the axis.

26. (Original) The rotational control apparatus of claim 25 wherein the annular body portion is mounted by an annular support, with the annular support including vanes located radially outward of the first and second drive components for drawing air radially outwardly intermediate the first and second drive components.

27. (Original) The rotational control apparatus of claim 26 wherein the output includes a mount having an outer annular portion forming a pilot extension for removably mounting a fan to the output, with the mount having openings radially inward of the pilot extension and of the first and

second drive components, with the vanes drawing air through the openings and intermediate the first and second drive components.

28. (Original) The rotational control apparatus of claim 25 wherein the cooling fins in the first and second quadratures are arranged solely at the acute angle.

29. (Original) The rotational control apparatus of claim 28 wherein the cooling fins in the second and fourth quadratures are arranged solely along radial lines from the axis.

30. (Original) The rotational control apparatus of claim 25 wherein the cooling fins extend axially from the annular body portion and terminate in free edges free of interconnection to any other portion of the rotational control apparatus.

31. (Original) In a rotational control apparatus in the form of a fan clutch for controlling the rotation of a fan and including an input rotatable about an axis, an output, with the input rotatable about the axis relative to the output, and first and second drive components carried by the input and output, respectively, for rotatably relating the input and the output, the improvement comprising, in combination: vanes located radially outward of the first and second drive components for drawing air radially outwardly intermediate the first and second drive components for creating air flow between the first and second drive components to provide cooling for the first and second drive components; and a mount having an outer annular portion forming a pilot extension for removably, slideably, mounting the fan to the output, with the mount having openings radially inward of the pilot extension and of the first and second drive components, with the vanes drawing air through the openings and intermediate the first and second drive components.

32. (Original) The rotational control apparatus of claim 31 wherein the first drive component is mounted to the input by an annular support, with the annular support including the vanes.

33. (Previously Added) The rotational control apparatus of claim 1 wherein the means for engaging the friction engaging surfaces of the input and output together to rotatably relate the input and output in the engaged condition and for disengaging the friction engaging surfaces of the input and output in the disengaged condition comprises a pressure cylinder, a piston, and one or more springs configured to bias the piston, wherein the piston is positioned relative to the pressure cylinder such that pressurized fluid selectively introduced into the pressure cylinder moves the piston in opposition to a biasing force of the one or more springs.

34. (Previously Added) The rotational control apparatus of claim 1 wherein the means for engaging the friction engaging surfaces of the input and output together to rotatably relate the input and output in the engaged condition and for disengaging the friction engaging surfaces of the input and output in the disengaged condition comprises a first force-generating mechanism and a second force-generating mechanism, wherein the first and second force-generating mechanisms are configured to generate forces in opposing directions.

35. (Previously Added) The rotational control apparatus of claim 4 wherein the speed at which the means for rotating the hub on the shaft at a speed different from the speeds when the first, friction disc portion is in the first and second positions is zero to achieve braking of the hub.

36. (Previously Added) The rotational control apparatus of claim 1 wherein one of the ring of magnetic material and the permanent magnets is mounted on the first, friction disc portion opposite to the friction engaging surface on the first, friction disc portion.

37. (Previously Added) The rotational control apparatus of claim 1 wherein one of the ring of magnetic material and the permanent magnets is mounted on a first side of the first, friction disc portion and wherein the friction engaging surface is positioned at a second side of the first, friction disc portion, the first side located opposite the second side.

38. (Previously Added) The rotational control apparatus of claim 1 wherein one of the ring of magnetic material and the permanent magnets is mounted on a first side of the first, friction disc portion and the friction engaging surface is positioned at a second side of the first, friction disc portion, wherein the first side faces a different direction than the second side.

39. (Previously Added) The rotational control apparatus of claim 1 and further comprising:

a first bearing positioned adjacent to the input;

a shaft extending radially inward of the input; and

a second bearing, wherein the second bearing is positioned adjacent to the shaft, wherein the first bearing and the second bearing have different and non-overlapping radial positions.

40. (Previously Added) The rotational control apparatus of claim 39 wherein the first bearing and the second bearing are axially spaced from each other.

41. (Previously Added) The rotational control apparatus of claim 1, the eddy current drive further comprising:

a radially outer portion secured to the input, wherein the radially outer portion wraps around an outer diameter portion of the first, friction disc portion.

42. (Previously Added) The rotational control apparatus of claim 1 wherein the first, friction disc portion is slideably mounted on and rotationally related to a hub rotatably mounted about an axis on a shaft, with the hub being rotatable relative to the shaft, and wherein the shaft is rotationally fixed.

43. (Previously Added) The rotational control apparatus of claim 1 wherein the output is rotated by torque transmitted from the input to the output exclusively by the eddy current drive when the friction engaging surfaces are in the disengaged condition.

44. (Previously Added) The rotational control apparatus of claim 1 wherein there are no electric controls for controlling torque transmission of the eddy current drive.

45. (Previously Added) The rotational control apparatus of claim 1 wherein spacing between the permanent magnets and the ring of magnetic material of the eddy current drive when the first, friction disc portion is in the first position is different compared to when the first, friction disc portion is in the second position with the friction engaging surfaces in the disengaged condition.

46. (Previously Added) The rotational control apparatus of claim 1 wherein spacing between the permanent magnets and the ring of magnetic material changes as the first friction disc portion moves from the second position to the first position.

47. (Previously Added) The rotational control apparatus of claim 1

wherein the means for engaging the friction engaging surfaces of the input and output together to rotatably relate the input and output in an engaged condition and for disengaging the friction engaging surfaces of the input and output in a disengaged condition comprises a pressure cylinder, a piston, and one or more springs configured to bias the piston, wherein the piston is positioned relative to the pressure cylinder such that pressurized fluid selectively introduced into the pressure cylinder moves the piston in opposition to a biasing force of the one or more springs,

wherein the output is rotated by torque transmitted from the input to the output exclusively by the eddy current drive when the friction engaging surfaces are in the disengaged condition, and

wherein spacing between the permanent magnets and the ring of magnetic material of the eddy current drive when the first, friction disc portion is in the first position is different compared to when the first, friction disc portion is in the

second position with the friction engaging surfaces in the disengaged condition.

48. (Previously Added) The rotational control apparatus of claim 1

wherein one of the ring of magnetic material and the permanent magnets is mounted on the first, friction disc portion opposite to the friction engaging surface of the first, friction disc portion,

wherein the output is rotated by torque transmitted from the input to the output exclusively by the eddy current drive when the friction engaging surfaces are in the disengaged condition, and

wherein spacing between the permanent magnets and the ring of magnetic material changes as the first friction disc portion moves from the second position to the first position.

49. (Previously Added) The rotational control apparatus of claim 6

wherein the means for engaging the friction engaging surfaces of the input and output together to rotatably relate the input and output in an engaged condition and for disengaging the friction engaging surfaces of the input and output in a disengaged condition comprises a pressure cylinder, a piston, and one or more springs configured to bias the piston, wherein the piston is positioned relative to the pressure cylinder such that pressurized fluid selectively introduced into the pressure cylinder moves the piston in opposition to a biasing force of the one or more springs,

wherein the output is rotated by torque transmitted from the input to the output exclusively by the eddy current drive when the friction engaging surfaces are in the disengaged condition, and

wherein spacing between the permanent magnets and the ring of magnetic material of the eddy current drive when the first, friction disc portion is in the first

position is different compared to when the first, friction disc portion is in the second position with the friction engaging surfaces in the disengaged condition.

Electronic Acknowledgement Receipt

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Application Number:	90009469
International Application Number:	
Confirmation Number:	4753
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First Named Inventor/Applicant Name:	5636719
Customer Number:	00164
Filer:	Austen P. Zuege
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RAM confirmation Number	1847
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Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

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90/009,469	05/21/2009	5636719	H550.18-0004	4753

164 7590 02/25/2010

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EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED: 02/25/2010

Please find below and/or attached an Office communication concerning this application or proceeding.

Notice of Intent to Issue Ex Parte Reexamination Certificate	Control No.	Patent Under Reexamination	
	90/009,469	5636719	
	Examiner	Art Unit	
	William C. Doerrler	3993	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ Prosecution on the merits is (or remains) closed in this *ex parte* reexamination proceeding. This proceeding is subject to reopening at the initiative of the Office or upon petition. *Cf.* 37 CFR 1.313(a). A Certificate will be issued in view of
   (a) ☒ Patent owner's communication(s) filed: *04 February 2010*.
   (b) ☐ Patent owner's late response filed: _____.
   (c) ☐ Patent owner's failure to file an appropriate response to the Office action mailed: _____.
   (d) ☐ Patent owner's failure to timely file an Appeal Brief (37 CFR 41.31).
   (e) ☐ Other: _____.

   Status of *Ex Parte* Reexamination:
   (f) Change in the Specification: ☐ Yes ☒ No
   (g) Change in the Drawing(s): ☐ Yes ☒ No
   (h) Status of the Claim(s):
      (1) Patent claim(s) confirmed: *1-9,12 and 13*.
      (2) Patent claim(s) amended (including dependent on amended claim(s)): *14-24*
      (3) Patent claim(s) cancelled: _____.
      (4) Newly presented claim(s) patentable: 33-49.
      (5) Newly presented cancelled claims: _____.
      (6) Patent claim(s) ☐ previously ☐ currently disclaimed: _____
      (7) Patent claim(s) not subject to reexamination: 10,11 and 25-32.

2. ☒ Note the attached statement of reasons for patentability and/or confirmation. Any comments considered necessary by patent owner regarding reasons for patentability and/or confirmation must be submitted promptly to avoid processing delays. Such submission(s) should be labeled: "Comments On Statement of Reasons for Patentability and/or Confirmation."

3. ☐ Note attached NOTICE OF REFERENCES CITED (PTO-892).

4. ☐ Note attached LIST OF REFERENCES CITED (PTO/SB/08 or PTO/SB/08 substitute.).

5. ☐ The drawing correction request filed on _____ is: ☐ approved ☐ disapproved.

6. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   ☐ been received.
   ☐ not been received.
   ☐ been filed in Application No. _____.
   ☐ been filed in reexamination Control No. _____.
   ☐ been received by the International Bureau in PCT Application No. _____.

   * Certified copies not received: _____.

7. ☐ Note attached Examiner's Amendment.

8. ☐ Note attached Interview Summary (PTO-474).

9. ☐ Other: _____.

cc: Requester (if third party requester)